

successfully powers the lock to open, the key's microprocessor then sends to the lock's rewritable EEPROM the cash counter data, the key ID number, the date and the time. The meter ID number can also be fed into the EEPROM, but this could already be stored there for the particular meter involved. As shown in the block 170, this transfer of data effects the erasing of the previous data in the rewritable EEPROM, that previous data relating to the previous collection at the same parking meter. The new data are stored until the next access event, thus providing data for a post-collection audit if necessary.

The block 172 shows that the cash counter data, lock ID, date and time are transferred to the key's data table, thus enabling these data to be uploaded to the home office computer for audit and reporting.

The above described preferred embodiments are intended to illustrate the principles of the invention, but not to limit its scope. Other embodiments and variations to this preferred embodiment will be apparent to those skilled in the art and may be made without departing from the spirit and scope of the invention as defined in the following claims.

We claim:

1. A mechanical key device formed as a solid unit and fitted for insertion into a lock cylinder, comprising;
 - (a) a key blade with mechanical bitting to fit a pattern of a lock cylinder,
 - (b) a key head fixed to the key blade,
 - (c) the key head including electrical contact means for engaging with a contact of a lock cylinder, leading to electronics in the lock cylinder and to an electrically-operated blocking device in the lock cylinder, in a one-wire bus connection, and a battery in the key head,
 - (d) microprocessor means in the key head, powered by the battery, and data storage means connected to the microprocessor means,
 - (e) a keypad on the key head with means for data entry,
 - (f) the battery being connected to power the microprocessor means and keypad and data storage means, and
 - (g) the microprocessor means and data storage means having means for reading an electronic ID code of a lock when the one-wire bus connection is made, and for looking up the read ID code in the data storage means and for making a yes or no decision, based on the content of the data storage means, as to whether the lock is authorized to be opened, and if so, for sending a prescribed data signal to the lock electronics and power from the battery to the lock's blocking device, to allow opening of the lock.

2. The apparatus of claim 1, wherein the data storage means has stored a PIN number for a particular authorized user of the key and the microprocessor means including means for preventing use of the key to open the lock in the case wherein a holder of the key does not enter into the keypad a PIN number which matches the stored PIN number.

3. The apparatus of claim 1, wherein the key head further includes at least one data port and means enabling downloading data from the data storage means to a central computer when the data port is connected to the central computer.

4. The apparatus of claim 1, wherein the key head further includes display means for displaying information to the keyholder, under the control of the microprocessor means.

5. A mechanical key device formed as a solid unit and fitted for insertion into a lock cylinder, comprising;

- (a) a key blade with mechanical bitting to fit a pattern of a lock cylinder,

- (b) a key head fixed to the key blade,
- (c) the key device including electrical contact means for engaging with a contact of a lock cylinder, leading to electronics in the lock cylinder and to an electrically-operated blocking device in the lock cylinder, in a one-wire bus connection,
- (d) a battery in the key head,
- (e) microprocessor means in the key head, powered by the battery, and data storage means in the key head connected to the microprocessor means,
- (f) the battery being connected to power the microprocessor means and data storage means, and
- (g) the microprocessor means and data storage means having means for reading an electronic ID code of a lock when the one-wire bus connection is made, and for looking up the read ID code in the data storage means and for making a yes or no decision, based on the content of the data storage means, as to whether the lock is authorized to be opened, and if so, for sending a prescribed data signal to the lock electronics and power from the battery to the lock's blocking device, to allow opening of the lock.

6. A series of coin collecting implements with lock devices in combination with a mechanical key device formed as a solid unit and fitted for insertion into a lock cylinder, comprising:

mechanical kpy device including:

- (a) a key blade with mechanical bitting to fit a pattern of a lock cylinder,
 - (b) a key head fixed to the key blade,
 - (c) the key device including electrical contact means for engaging with a contact of a lock cylinder of a lock device, leading to electronics in the lock cylinder and to an electrically-operated blocking device in the lock cylinder, in a one-wire bus connection,
 - (d) a battery in the key head,
 - (e) microprocessor means in the key head, powered by the battery, and data storage means in the key head connected to the microprocessor means,
 - (f) the battery being connected to power the microprocessor means and data storage means,
 - (g) the microprocessor means and data storage means having means for reading an electronic ID code of a lock device when the one-wire bus connection is made, and for looking up the read ID code in the data storage means and for making a yes or no decision, based on the content of the data storage means, as to whether the lock device is authorized to be opened, and if so, for sending a prescribed data signal to the lock cylinder electronics and power from the battery to the lock's blocking device, to allow opening of the lock device, and
 - (h) an infrared reading device on the key head connected to the microprocessor means and capable of reading an infrared signal emitted by the implement when held adjacent thereto for storage in the microprocessor means;
- the coin collecting implements and lock devices comprising:
- each lock device having a said lock cylinder with said electronics and said electrically-operated blocking device,
 - each lock device having an electronic ID storage device as a part of said electronics and storing said electronic ID code,
 - the lock device also having a mechanical bitting pattern of said lock cylinder fitted to the key blade,

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- each lock device securing a coin storage area of said coin collecting implement,
 each coin collecting implement further including a coin counter device for electronically counting the coins entering the coin storage area and the coin counter device having means for electronically storing a total representing the number of coins which are stored, and
 the implement additionally including infrared transmitter means connected to the coin counter device for emitting an infrared signal representing the number of coins collected in the coin storage area, said coin counter device and infrared transmitter means being separate and independent and not connected to the lock device or the lock electronics.

7. The apparatus of claim 6, wherein the blocking device of the lock cylinder is positioned to prevent rotation of the key blade in the lock cylinder until said prescribed data signal is sent to the lock electronics, with a solenoid operating the blocking device to retract the blocking device when power is sent to the blocking device from the key device, upon the lock being authorized to be opened and the prescribed data signal being received in the lock device.

8. The apparatus of claim 7, wherein each coin collection implement has a coin slot for inserting coins to reach said coin storage area and wherein the coin slot is recessed and the infrared transmitter means is located within the coin slot, and the key head including a projection shaped to be inserted partially into the coin slot, the projection carrying the infrared reading device.

9. The apparatus of claim 6, wherein the microprocessor means in the key head includes means for withholding said prescribed signal until after a user of the key has caused the key head to read the infrared signal emitted by the infrared transmitter means, containing data relating to total coins stored in the coin storage area.

10. The apparatus of claim 6, wherein the lock device additionally includes an EEPROM capable of recording the

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transactions comprising openings of the lock device as transmitted in data from the key device, the data stored by the EEPROM also including a coin total as read into the key from the infrared transmitter means of the coin counter device and also including ID data from the key to identify the key which accessed the lock device.

11. The apparatus of claim 6, wherein the electronic ID storage device in the lock device comprises an EEPROM with capability of changing the stored electronic ID code on receipt of a signal from the key device via said one-wire bus connection, whereby the electronic ID code of the lock device can be changed for security purposes in case of a lost or stolen key device.

12. The apparatus of claim 6, wherein the key head further includes a keypad with means for data entry into the microprocessor means, and wherein the data storage means has stored a PIN number for a particular authorized user of the key and the microprocessor means including means for preventing use of the key device to open the lock device in the case wherein the holder of the key device does not enter via the keypad a PIN number which matches the stored PIN number.

13. The apparatus of claim 5, in combination with a series of lock devices each having an electronic ID storage device storing said electronic ID code, the lock device also having a mechanical bitting pattern fitted to the key blade.

14. The apparatus of claim 6, wherein the lock device additionally includes an EEPROM capable of recording at least one transaction comprising accessing of the lock device, by reading data from the key device, said data from the key device including a unique identification code for the particular key device, whereby an audit can be performed on the lock devices to determine which key device has been used to access the lock device.

15. The apparatus of claim 14, wherein the data from the key device, stored by the EEPROM of the lock device, further includes date and time of access.

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